

REMARKS/ARGUMENTS

In the Office Action mailed November 16, 2004, the Examiner rejected claims 1-7, 9-13, 15-19 and 21-28. The Examiner also objected to claims 8, 14 and 20 as being dependent upon a rejected base claim, but held that they would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

Applicants respectfully thank the Examiner for the finding of allowable subject matter. Applicants herewith amend claims 8, 14 and 20 to be in independent form.

Rejected Claims:

The Examiner rejected claims 1-7, 9-13, 15-19 and 21-28 as allegedly unpatentably obvious over EP 1080898 A2 (Saul) in view of US 6,186,611 (Shiraishi) and US 5,751,302 (Rezanka).

Applicants respectfully submit that the Examiner has failed to establish a prima facie case of obviousness at least because he has failed to establish a motivation to combine Shiraishi with either one of Saul or Rezanka to teach all of the limitations of the rejected claims. For example, The Examiner has not established a motivation to combine Shiraishi with Saul or Rezanka to teach at least the following limitations: "an internal power supply configured to provide a substantially constant voltage," as recited in claims 1, 9, 21 and 26, or an "internal substantially constant voltage" as recited in claim 15, 24.

Moreover, Shiraishi teaches away from a "substantially constant voltage" as recited in all of the rejected independent claims and incorporated into the respective dependent claims. Shiraishi discusses a power source circuit 10 which provides a modulation voltage VM which is a triangular wave. FIG. 1, 3:44-45; FIG. 6(b), 6:22-23. FIG. 6(k) of Shiraishi shows an "electrode voltage DM of the head drive signal" and AC voltage signals p and q of which phases

are deviated by 180 degrees from each other . . . and which are applied to the electrodes 3 and 4.” The voltages shown are not substantially constant. The Abstract of Shiraishi discusses that, “a voltage of a sawtooth waveform is generated and used, and a part of this sawtooth waveform voltage is used at different timings to apply different voltages to the electrodes. Thus, a satisfactory gradation recording is carried out by changing the dot sizes.” The Examiner has not established a motivation to combine the triangular wave, or the method of gradation of printing, or the AC voltage signals, or the use of conductive ink as discussed in Shiraishi with either one of Rezanka or Saul to practice a “substantially constant voltage” as claimed in the rejected claims.

The Examiner has also failed to establish a motivation to combine Shiraishi with either one of Saul or Rezanka to teach the limitation of, “addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the same zone are coupled to a same fire pulse”

In support of the rejections, the Examiner stated, “a corresponding zone [(of Shiraishi)] has one firing element,” referring to Shiraishi FIG. 1 element 1, which includes four “pair[s] of electrodes” 3, 4. 3:42-43. Accordingly, Shiraishi does not disclose, teach or suggest “addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones” - since any zone of Shiraishi would not include plural “firing resistors” or “pair[s] of electrodes.”

The Examiner has also failed to establish a motivation to combine Shiraishi with either Saul or Rezanka to teach the limitation of “firing resistors” as recited in all of the rejected claims. Saul recites “a plurality of heater resistors” Para. [0027]. Shiraishi recites a “gradation record control apparatus for an ink jet printer” (2:41-42) where the ink jet printer includes “an ink chamber filled with a conductive ink, and 3 and 4 a pair of electrodes.” 3:42-43. “[W]hen the

conductive ink in the periphery of the electrodes 3 and 4 is to be jetted, the high and low levels of the pulse signals I and j respectively are alternately repeated for a predetermined period and an AC current is flown between the electrodes 3 and 4.” 4:11-14. In support of the rejection, the Examiner alleged that, “it would have been obvious for one of ordinary skill in the art to combine the teaching of using the addressable select logic disclosed by Shiraishi to couple a selected firing pulse from multiple fire pulses to drive a firing element in order to control the amount of ink ejected from a corresponding nozzle; in other words, the gradation of the printed image is controlled.” However, the Examiner has not established that the method of Shiraishi for “changing the dot sizes” would be combined with the printing methods of either Saul or Rezanka to achieve the stated effect of gradation control. Nor had the Examiner established a motivation to combine Shiraishi with either one of Saul or Rezanka to achieve “gradation of the printed image” as alleged by the Examiner.

Applicants respectfully submit that the Examiner’s rejection under section 103 is the product of improper hindsight reconstruction, using Applicants’ disclosure as a blueprint to find isolated elements of a claimed combination in disparate references. The Examiner has failed to consider the claimed combination as a whole. Applicants therefore respectfully request that the Examiner withdraw the section 103 rejections.

New Claims:

Applicants respectfully request the Examiner to enter the new claims 29-35. Applicants respectfully submit that the claims are fully supported in the Specification as originally filed at least at original claims 1-7 and FIG. 3.

Applicants respectfully submit that new claims 29-35 are not unpatentably obvious over any of Shiraishi, Saul or Rezanka, alone or in combination, at least for reasons similar to those given above with respect to claim 1. Moreover, there would be no motivation to combine Shiraishi with

Saul or Rezanka to practice all of the limitations of new claims 29-35, including, for example:

“ . . . wherein each zone has a plurality of firing resistors and a plurality of corresponding nozzles; and

addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the same zone are coupled to a same fire pulse ”

as recited in claim 29 and incorporated into dependent claims 30-35. The Examiner stated that Shiraishi discloses, “a select logic unit responsive to a select address (FIG. 1, signal SEL) to couple multiple fire pulses (FIG. 1, signals SM1-4) to the firing elements (FIG. 1, element 1) in the zones (FIG. 1: *a corresponding zone has one firing element*) ” (emphasis added). Accordingly, there is no motivation to combine Shiraishi with Saul or Rezanka to practice the combination of limitations including, “each zone has a plurality of firing resistors” and “so that selected firing resistors in the same zone are coupled to the same fire pulse ”

CONCLUSION

Applicants respectfully request the Examiner to enter the amendments to the claims, withdraw the rejections of claims 1-7, 9-13, 15-19 and 21-28 for the reasons stated above, and to allow pending claims 1-28 and new claims 29-35.

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Respectfully submitted,



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